

## DATA ITEM DESCRIPTION

**Title:** FIRMWARE SUPPORT MANUAL (FSM)

**Number:** DI-IPSC-81448A

**Approval Date:** 19991215

**AMSC Number:** N7370

**Limitation:**

**DTIC Applicable:**

**GIDEP Applicable:**

**Office of Primary Responsibility:** N/SPAWAR

**Applicable Forms:**

**Use, Relationships:**

The Firmware Support Manual (FSM) provides the information needed to program and reprogram the firmware devices of a system. It applies to read only memories (ROMs), Programmable ROMs (PROMs), Erasable PROMs (EPROMs), and other firmware devices.

The FSM describes the firmware devices and the equipment, software, and procedures needed to erase firmware devices, load software into the firmware devices, verify the load process, and mark the loaded firmware devices.

This Data Item Description (DID) contains the format and content preparation instructions for the data product generated by specific and discrete task requirements as delineated in the contract.

This DID is used when the developer is tasked to identify and record information needed to program and reprogram firmware devices in which software will be installed.

This DID supersedes DI-IPSC-81448.

### **Requirements:**

1. Reference documents. None.

2. General instructions.

a. Automated techniques. Use of automated techniques is encouraged. The term "document" in this DID means a collection of data regardless of its medium.

b. Alternate presentation styles. Diagrams, tables, matrices, and other presentation styles are acceptable substitutes for text when data required by this DID can be made more readable using these styles.

3. Format. Following are the format requirements.

The manual shall be in contractor format unless otherwise specified on the Contract Data Requirements List (CDRL)(DD 1423). The CDRL should specify whether deliverable data are to be delivered on paper or electronic media; are to be in a given electronic form (such as ASCII,

CALS, or compatible with a specified word processor or other support software); may be delivered in developer format rather than in the format specified herein; and may reside in a computer-aided software engineering (CASE) or other automated tool rather than in the form of a traditional document.

4. Content. The manual shall contain the following:

a. Title page or identifier. The document shall include a title page containing, as applicable: document number; volume number; version/revision indicator; security markings or other restrictions on the handling of the document; date; document title; name, abbreviation, and any other identifier for the system, subsystem, or item to which the document applies; contract number; CDRL item number; organization for which the document has been prepared; name and address of the preparing organization; and distribution statement. For data in a database or other alternative form, this information shall be included on external and internal labels or by equivalent identification methods.

b. Table of contents. The document shall contain a table of contents providing the number, title, and page number of each titled paragraph, figure, table, and appendix. For data in a database or other alternative form, this information shall consist of an internal or external table of contents containing pointers to, or instructions for accessing, each paragraph, figure, table, and appendix or their equivalents.

c. Page numbering/labeling. Each page shall contain a unique page number and display the document number, including version, volume, and date, as applicable. For data in a database or other alternative form, files, screens, or other entities shall be assigned names or numbers in such a way that desired data can be indexed and accessed.

d. Response to tailoring instructions. If a paragraph is tailored out of this DID, the resulting document shall contain the corresponding paragraph number and title, followed by "This paragraph has been tailored out." For data in a database or other alternative form, this representation need occur only in the table of contents or equivalent.

e. Multiple paragraphs and subparagraphs. Any section, paragraph, or subparagraph in this DID may be written as multiple paragraphs or subparagraphs to enhance readability.

f. Standard data descriptions. If a data description required by this DID has been published in a standard data element dictionary specified in the contract, reference to an entry in that dictionary is preferred over including the description itself.

g. Substitution of existing documents. Commercial or other existing documents may be substituted for all or part of the document if they contain the required data.

The numbers shown designate the paragraph numbers to be used in the document.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system, software, and firmware devices to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s) of the system and software and manufacturer's name and model number for each firmware device.

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document. This section shall also identify the source for all documents not available through normal Government stocking activities.

3. Firmware programming instructions. This section shall be divided into the following paragraphs.

3.x (Identifier of programmed firmware device). This paragraph shall state the project-unique identifier of a programmed firmware device to be used in the system and shall be divided into the following subparagraphs.

3.x.1 Description of pre-programmed device. This paragraph shall:

a. Identify by manufacturer's name and model number the firmware device to be programmed

b. Provide a complete physical description of the firmware device, including the following, as applicable:

- 1) Memory size, type, speed, and configuration (such as 64Kx1, 8Kx8)
- 2) Operating characteristics (such as access time, power requirements, logic levels)
- 3) Pin functional descriptions
- 4) Logical interfaces (such as addressing scheme, chip selection)
- 5) Internal and external identification scheme used
- 6) Timing diagrams

c. Describe the operational and environmental limits to which the firmware device may be subjected and still maintain satisfactory operation

3.x.2 Software to be programmed into the firmware device. This paragraph shall identify by project-unique identifier(s) the software to be programmed into the firmware device.

3.x.3 Programming equipment. This paragraph shall describe the equipment to be used for programming and reprogramming the firmware device. It shall include computer equipment, general purpose equipment, and special equipment to be used for device erasure, loading, verification, and marking, as applicable. Each piece of equipment shall be identified by manufacturer's name, model number, and any other information that is necessary to uniquely identify that piece of equipment. A description of each piece of equipment shall be provided, including its purpose, usage, and major capabilities.

3.x.4 Programming software. This paragraph shall describe the software to be used for programming and reprogramming the firmware device. It shall include software to be used for device erasure, loading, verification, and marking, as applicable. Each software item shall be identified by vendor's name, software name, number, version/release, and any other information necessary to uniquely identify the software item. A description of each software item shall be provided, including its purpose, usage, and major capabilities.

3.x.5 Programming procedures. This paragraph shall describe the procedures to be used for programming and reprogramming the firmware device. It shall include procedures to be used for device erasure, loading, verification, and marking, as applicable. All equipment and software necessary for each procedure shall be identified, together with any security and privacy measures to be applied.

3.x.6 Installation and repair procedures. This paragraph shall contain the installation, replacement, and repair procedures for the firmware device. This paragraph shall also include remove-and-replace procedures, device addressing scheme and implementation, description of the host board layout, and any procedures for ensuring continuity of operations in the event of emergencies. Safety precautions, marked by WARNING or CAUTION, shall be included where applicable.

3.x.7 Vendor information. This section shall include or reference any relevant information supplied by the vendor(s) of the firmware device, programming equipment, or programming software.

4. Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

A. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

END OF DI-IPSC-81448A.